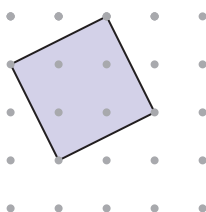
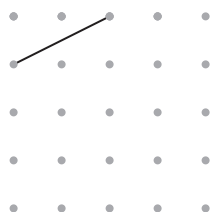


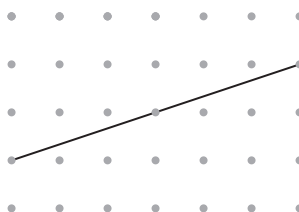
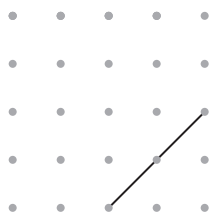
2.3 Using Squares to Find Lengths

You can use a square to find the length of a segment connecting dots on a grid. For example, to find the length of the segment on the left, draw a square with the segment as a side. The square has an area of 5 square units, so the segment has length $\sqrt{5}$ units.



Problem 2.3 Using Squares to Find Lengths

- A. 1.** On 5 dot-by-5 dot grids, draw line segments with as many different lengths as possible by connecting dots. Label each segment with its length. Use the $\sqrt{\quad}$ symbol to express lengths that are not whole numbers. (**Hint:** You will need to draw squares that extend beyond the 5-dot-by-5-dot grids.)
- 2.** List the lengths in increasing order.
- 3.** Estimate each non-whole number length to one decimal place.
- B.** Ella says the length of the segment at the left below is $\sqrt{8}$ units. Isabel says it is $2\sqrt{2}$ units. Are both students correct? Explain.



- C. 1.** Question B gives two ways of expressing the exact length of a segment. Express the exact length of the segment at the right above in two ways.
- 2.** Can you find a segment whose length cannot be expressed in two ways as in Question B?

ACE Homework starts on page 23.